

REMARKS

Claim 75 is cancelled without prejudice or disclaimer and new claim 87 is added. Hence, claims 59-74 and 76-87 are all the claims pending in the application. Claims 59, 69, 76, 77, 79, 80, 81, 85 and 86 are amended.

Rejections Under 35 U.S.C. § 101

Claims 59-86 are rejected under 35 U.S.C. § 101 for allegedly being directed to non-statutory subject matter. Applicant respectfully traverses the rejections and submits that the claims meet the requirements for statutory subject matter for at least the following reasons.

Considering first claim 59, the rejection is based on the premise that “the claim contains an abstract idea (e.g., ‘searching and extracting’).” Office Action, para. 6. Based on that premise, the claim is analyzed as if it is directed only to an abstract idea and the Office Action jumps to an analysis of whether the claim is drawn to a practical application of the alleged idea. This position presupposes that the claim is drawn to a mere idea. It is not. Applicant submits that claim 59 as a whole clearly is directed to patentable subject matter and not merely to an idea. Claim 59 recites “An index structure for locating and extracting a fragment of metadata divided into fragments, the index structure contained in a computer readable storage medium.” The index structure being contained in a computer readable storage medium is not a mere idea; it is an article of manufacture. See *In re Lowry*, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994).

In *Lowry* the Court affirmed the Board of Patent Appeals and Interferences found that a data structure stored in a memory defines patentable subject matter. For example, the Court stated:

1. A memory stores data according to a particular order or arrangement.
Application programs use stored data to perform specified functions.

A data model provides the framework for organizing and representing information used by an application program. Data models define permissible data structures -- organizational structures imposed upon the data used by the application program -- compatible with particular data processing systems. Data structures are the physical implementation of a data model's organization of the data. Data structures are often shared by more than one application program.

Id. at 1032.

The Court in *Lowry* further stated the following finding that the data structures in a memory are not mere abstractions but are structural elements that provide tangible benefits:

2. More than mere abstraction, the data structures are specific electrical or magnetic structural elements in a memory. According to *Lowry*, the data structures provide tangible benefits: data stored in accordance with the claimed data structures are more easily accessed, stored, and erased. *Lowry* further notes that, unlike prior art data structures, *Lowry*'s data structures simultaneously represent complex data accurately and enable powerful nested operations. In short, *Lowry*'s data structures are physical entities that provide increased efficiency in computer operation. They are not analogous to printed matter. The Board is not at liberty to ignore such limitations.

Id. at 1035.

As in *Lowry*, claim 59 is directed to a data structure contained in a computer-readable storage medium, and hence, recites patentable subject matter.

Claim 59 recites “locating and extracting the fragment of metadata” using the claimed index structure. The Examiner asserts that “searching or extracting” are merely abstract manipulations that do not realize a “useful, concrete and tangible result.” Office Action at p. 3. Applicant respectfully disagrees. Aside from the claimed index structure corresponding closely to *Lowry*'s data structure contained in a memory, which the Federal Circuit agreed is patentable subject matter, extracting a fragment of metadata allows the metadata to be used for a variety of real and useful purposes. It is not an abstract idea. For example, metadata is used for displaying titles and schedules of TV programs which allow a user to select a desired program. See para.

[04]. If the fragment of metadata cannot be located and extracted the metadata cannot provide useful information to the user and enable useful features such as allowing a user to select a program based on displayed metadata. A mere idea does not provide for locating and extracting metadata that is then used to enrich a television experience.

Further, the present application discloses that the claimed index structure provides tangible benefits. For example, the application in paragraph [189] describes the index structure as allowing for more efficient searches and access to information about content. The index structure also “enables simultaneous search by compound conditions for TV Anytime metadata.” Para. [190].

Not only has the Federal Circuit found data structures stored in a memory to be directed to statutory subject matter, the USPTO has long recognized that computer programs embodied on a tangible medium are patentable subject matter. *In re Beauregard*, 53 F.3d 1583, 35 USPQ2d 1383 (“The Commissioner now states ‘that computer programs embodied in a tangible medium, such as floppy diskettes, are patentable subject matter under 35 U.S.C. § 101 and must be examined under 35 U.S.C. §§ 102 and 103.’”).

The Examiner also asserts that the claims are directed to non-functional descriptive matter stored on a computer readable medium, and hence, are non-statutory. Applicant respectfully traverses this ground of rejection. As stated in the Interim Guidelines for Examination of Computer Related Inventions, Annex IV Computer-Related Nonstatutory Subject Matter, descriptive material is broken down into “functional descriptive material” and non-functional descriptive material.” As stated in the Guidelines “‘functional descriptive material’ consists of data structures and computer programs which impart functionality when

employed as a computer component.” In contrast, “[n]onfunctional descriptive material’ includes but is not limited to music, literary works and a compilation or mere arrangement of data.” See MPEP §2106.01.

The claimed index structure contained in a computer-readable storage medium closely corresponds to the functional data structures described in the MPEP rather than the non-functional music, literary works, etc. Contrary to the assertion in the Office Action that the claimed index structure is “a mere arrangement of data” Applicant points out that the claim recites a functional relationship between the elements of the claim. For example, the claimed list of multi-keys corresponds to a combination of fields of the metadata. The claimed location information defines the multi-keys in the list and is used for locating and extracting the fragment of metadata. Further, the multi-key is used to locate and extract the fragment of metadata. This is not a mere arrangement of data like music tracks on a CD. Rather the claim defines a functional relationship between the elements of the claim and thus recites patentable subject matter.

Applicant respectfully submits that the remaining claims are directed to patentable subject matter for similar reasons.

Rejections Under 35 U.S.C. § 103: Claims 59-74 and 77-86

Claims 59-74 and 77-86 are rejected under 35 U.S.C. §103(a) as being unpatentable over the Evain reference in view of Shadmon (U.S. patent no. 6,804,677).

Claims 59, 69, 77, 79, 80, 81, 85 and 86 are amended to recite the limitation from claim 75 and thus it is respectfully submitted that the asserted combination does not render claims 59-74 and 77-86 unpatentable.

Rejections Under 35 U.S.C. § 103: Claims 75 and 76

Claims 75 and 76 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Evain in view of Shadmon and further in view of Jenkins.

In the Office Action it is asserted that these claims are obvious over the Evain reference in view Shadmon and further in view of Jenkins. Independent claims 59, 69, 77, 79, 80, 81, 85 and 86 are amended to recite the limitation from claim 75 and claim 75 is canceled without prejudice or disclaimer. Applicant respectfully submits that the asserted Evain/Shadmon/Jenkins combination does not render these independent claims, or claim 76, unpatentable.

The limitations from claim 75 are directed to comparing the fields of the multi-key. The claim recites that “the combined fields are compared in sequence, starting from a first field having a highest order of priority” The Examiner admits that neither Evain nor Shadmon teach this feature and relies on Jenkins for supplying the missing teaching. Specifically, the Examiner relies on Jenkins’ disclosure at col. 2, lines 17-38.

Jenkins is directed to implementing indexes in database management systems. See col. 1, lines 6-8. Jenkins discloses in col. 2, lines 17-38 that “an index can be created on multiple columns of the table,” and that “[s]uch an index would include composite key values in the form of column1.column2, where column1 and column2 are the constraint columns from the table.” Jenkins discloses an example of building an index on a student information table using a grade_level column and a student_identification column to create a composite key (grade_level.student_identification). Jenkins discloses sorting the index in ascending order based on the student_identification in each particular grade_level, and also discloses sorting in other orders.

The Examiner asserts that it would have been obvious to have modified the asserted Evain/Shadmon combination to have multi-keys that comprise fields of the metadata that are prioritized in which the combined fields are compared in sequence starting from a first field having a highest order of priority, as recited in the claim. The Examiner asserts that a person skilled in the art would have been motivated to modify the Evain/Shadmon combination to improve processing of queries involving multiple fields of constraint. See p. 10 of the Office Action.

Applicant respectfully submits that Evain and Shadmon are directed to hierarchical index structures contained in XML. In contrast, Jenkins concerns relational databases where data are stored in relational tables. It is respectfully submitted that it would not have been obvious to apply Jenkin's ordering of a relational table to the hierarchical XML structure of the Evain/Shadmon combination. While sorting a relational table may improve query processing in a relational database, such benefits would not necessarily accrue in a hierarchical storage structure such as an XML document. Accordingly, it is respectfully submitted that a person of ordinary skill in the art would not have modified the XML system of the Evain/Shadmon combination to use the relational table ordering techniques of Jenkins.

New Claim

New claim 87 is added, which depends from claim 59. Claim 87 is supported in the specification at least by Table 4. It is respectfully submitted that claim 87 is patentable over the prior art of record.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

AMENDMENT UNDER 37 C.F.R. § 1.111
Attorney Docket No.: Q76495
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Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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